STYLEGUIDE

STOP TELLING YOUR LIGHTS EVERYTHING, GREEN UP IDEAL DAILY ENVIRONMENT

Let ask some questions...

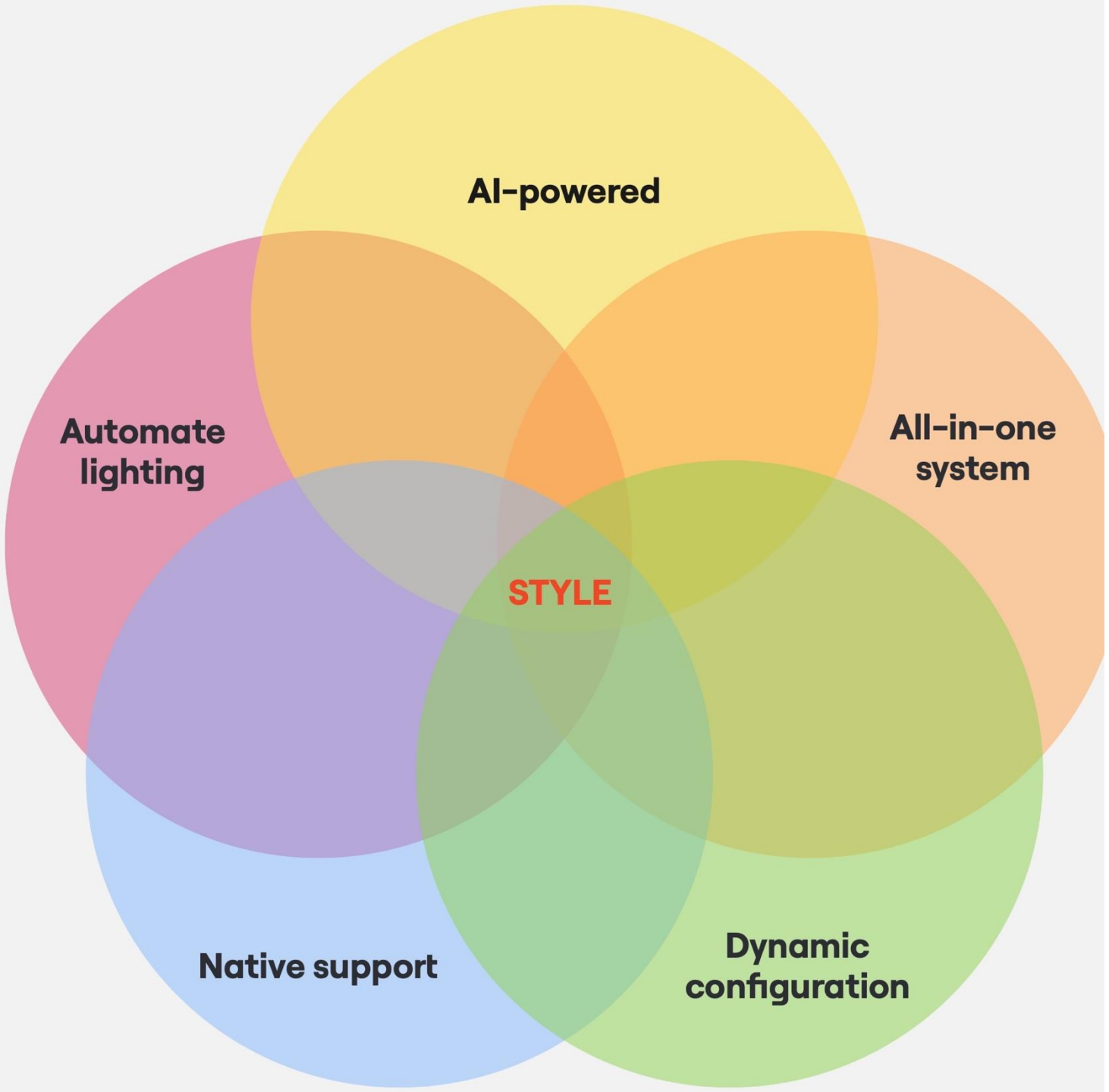
HOW MANY TIMES DO WE FORGET A LIGHT ON?

Let ask some questions...

HOW MANY TIMES ARE WE TOO LAZY TO TURN IT OFF?

Let ask some questions…

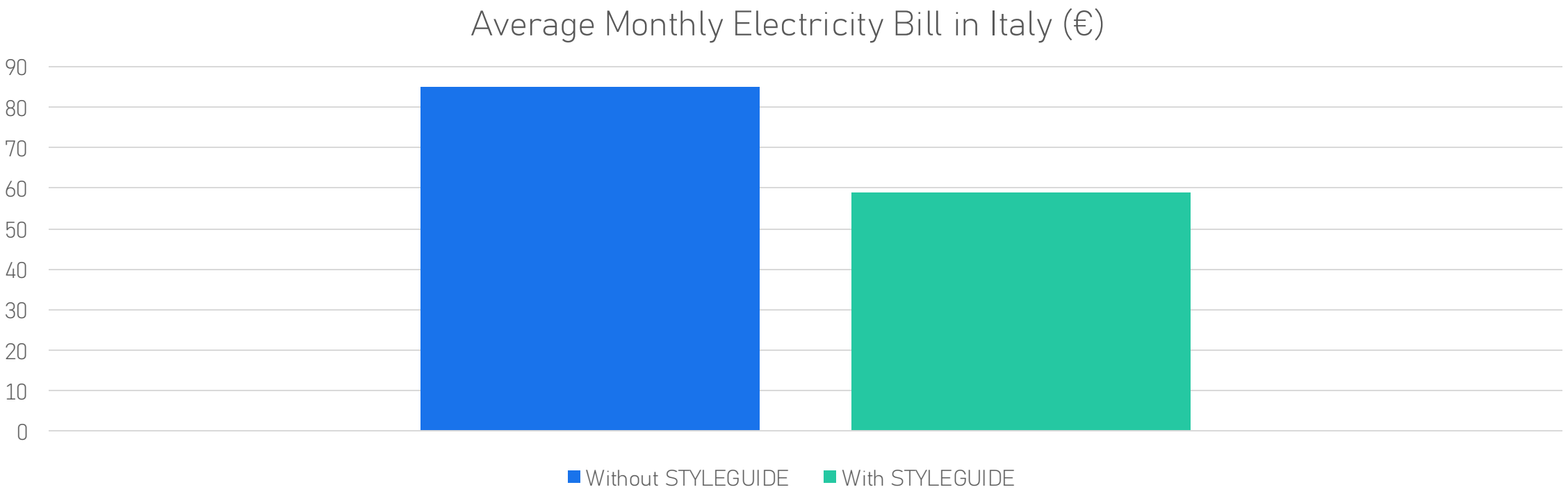
WHAT IF THE LIGHTS COULD UNDERSTAND ON THEIR OWN WHAT TO DO?



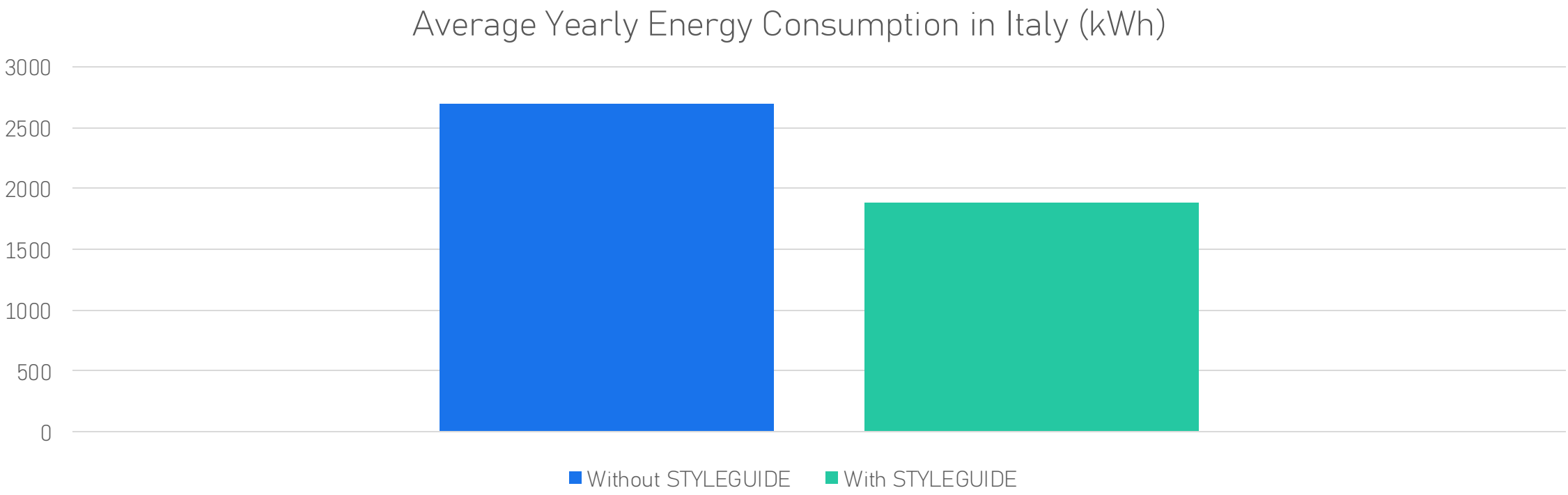
STYLE: Stop Telling Your Lights Everything

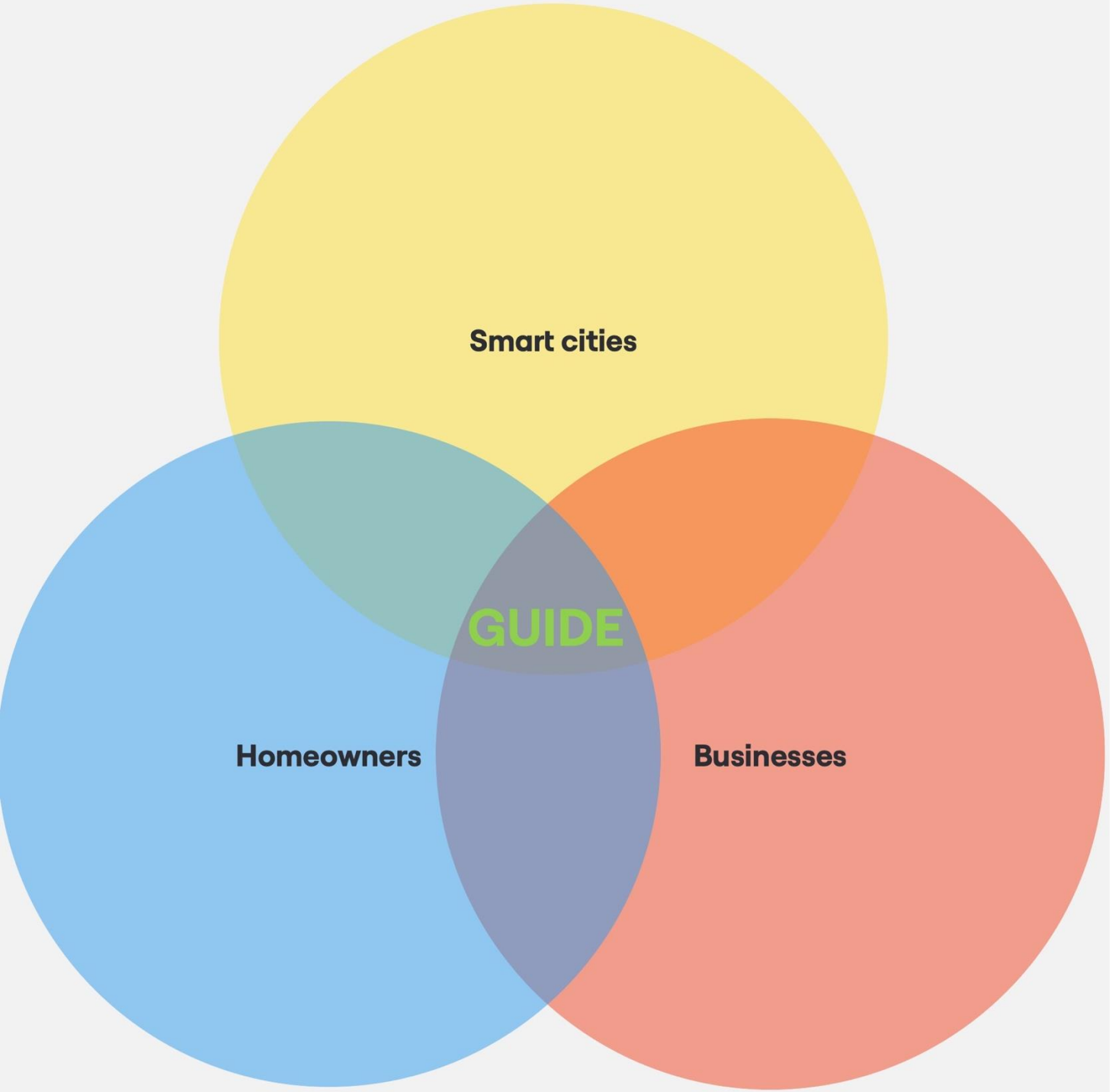
THEY KNOW WHAT YOU WANT, YOU DON'T NEED TO ASK FOR IT

Some numbers...



Some numbers...



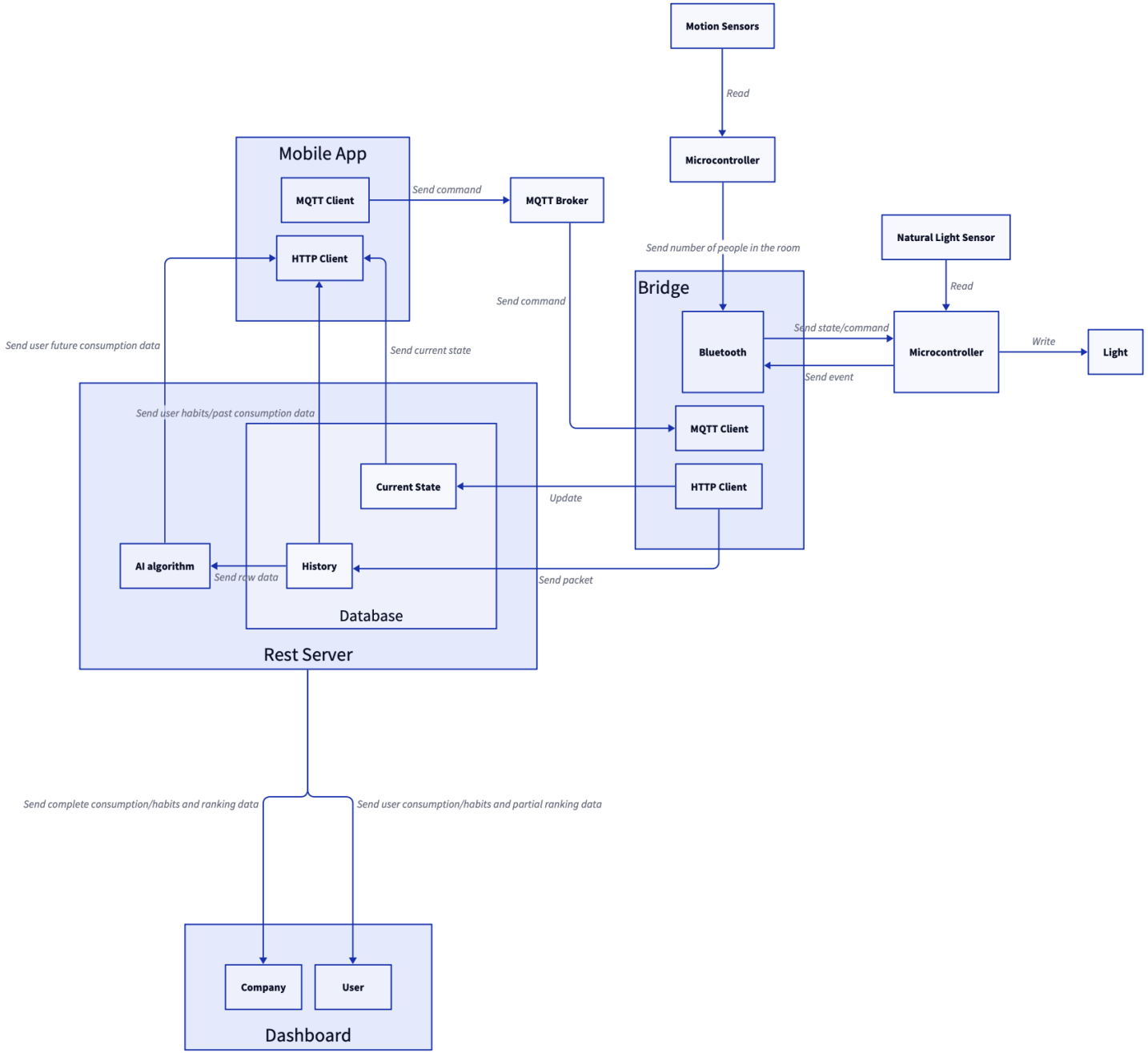


GUIDE: Green Up Ideal Daily Environment

WIN-WIN SCENARIO: BENEFITS FOR BOTH THE CLIENT AND THE ENVIRONMENT

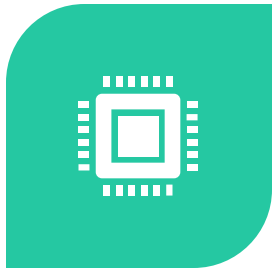
User Centered Design

WITH COMPANION APP AND VOICE ASSISTANT



Architecture

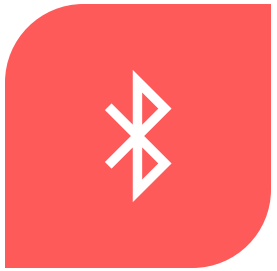
Demo



MICROCONTROLLER(S) -> 1X ARDUINO UNO

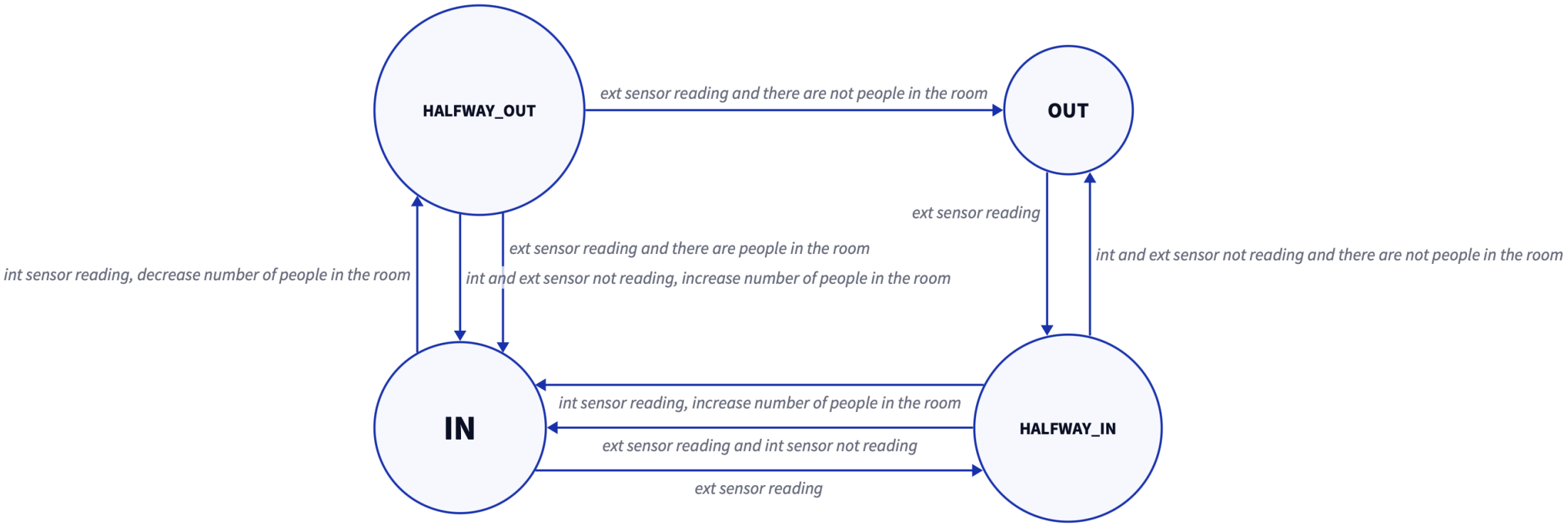
MOTION SENSORS -> 2X PIR SENSOR HC-SR501

NATURAL LIGHT SENSOR -> 1X PHOTORESISTOR



BLUETOOTH COMMUNICATION -> SERIAL COMMUNICATION

FSM Arduino


HALFWAY_OUT
ext sensor reading and there are not people in the room
OUT
ext sensor reading
int and ext sensor not reading and there are not people in the room
ext sensor reading and there are people in the room
int and ext sensor not reading, increase number of people in the room
int sensor reading, decrease number of people in the room
IN
int sensor reading, increase number of people in the room
ext sensor reading and int sensor not reading
ext sensor reading
HALFWAY_IN

```
/* ---------------- DATA TO SEND -------------------- */

const byte AUTO_ENABLED = 238;
const byte AUTO_DISABLED = 239;
const byte peopleInTheRoomOffset = 240; // random byte to be distinguished from other event signals
 // to be subtracted from the byte received to get the actual number of people in the room

// LIGHT STATES AND CAUSES

const byte AUTO_OFF = 0;
const byte SWITCH_OFF = 2;
const byte SWITCH_ON = 3;
const byte MOBILE_APP_OFF = 4;
const byte VOICECOMMAND_OFF = 6;

// Signals

// The format is COLOR_MODE_INTENSITY (HIGH = 255, MEDIUM = 64, LOW = 8)

const byte RED_VOICE_HIGH = 8;
const byte RED_VOICE_MEDIUM = 9;
const byte RED_VOICE_LOW = 10;

const byte RED_MOBILE_APP_HIGH = 11;
const byte RED_MOBILE_APP_MEDIUM = 12;
const byte RED_MOBILE_APP_LOW = 13;

const byte RED_AUTO_HIGH = 14;
const byte RED_AUTO_MEDIUM = 15;
const byte RED_AUTO_LOW = 16;

const byte RED_SWITCH_HIGH = 17;
const byte RED_SWITCH_MEDIUM = 18;
const byte RED_SWITCH_LOW = 19;
```

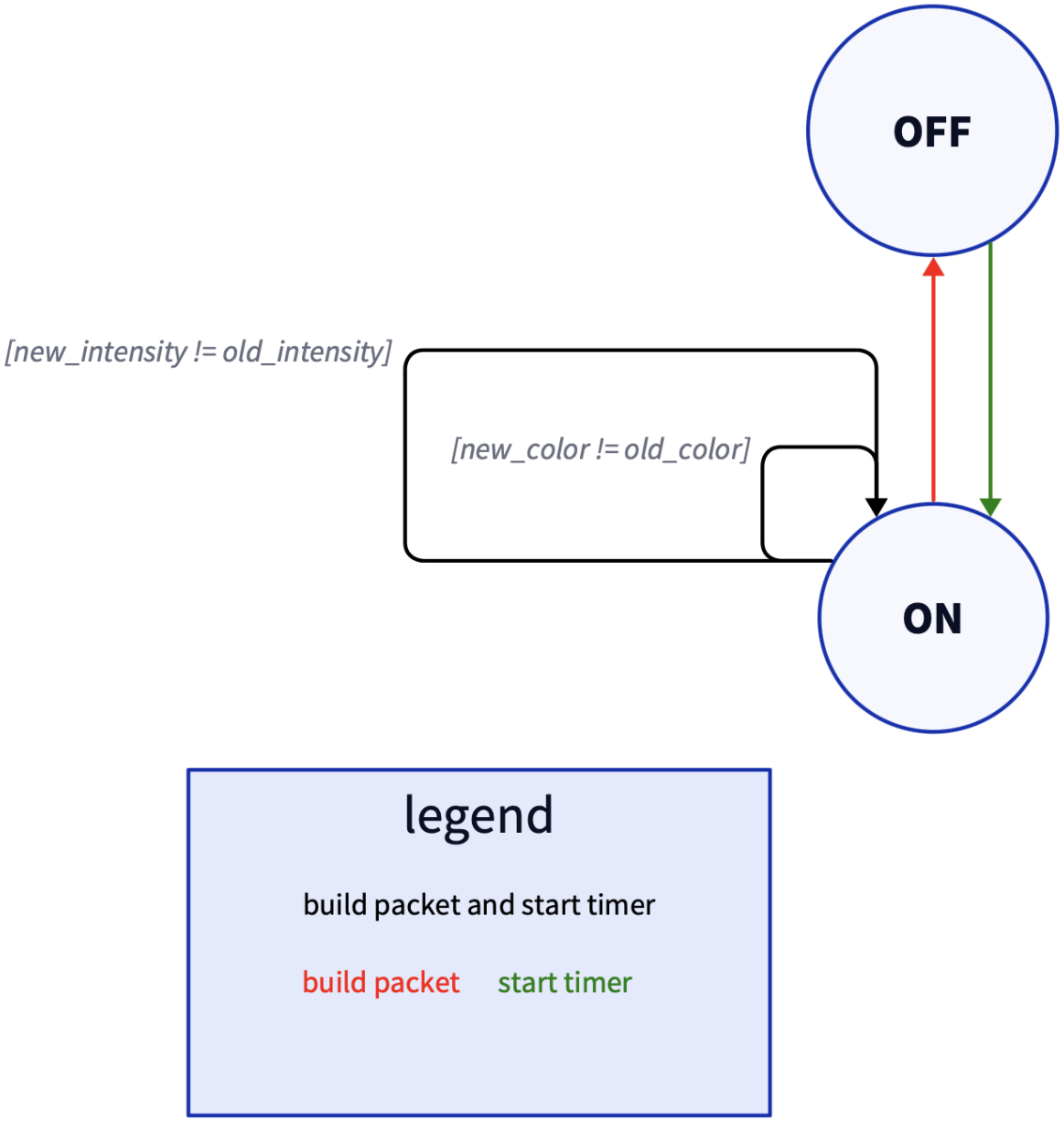
Serial Protocol Arduino -> Bridge

1 BYTE SENT FROM ARDUINO TO THE BRIDGE

Serial Protocol Bridge -> Arduino

1 integer for enable/disable auto mode

4 integers to change color (R,G,B,M)



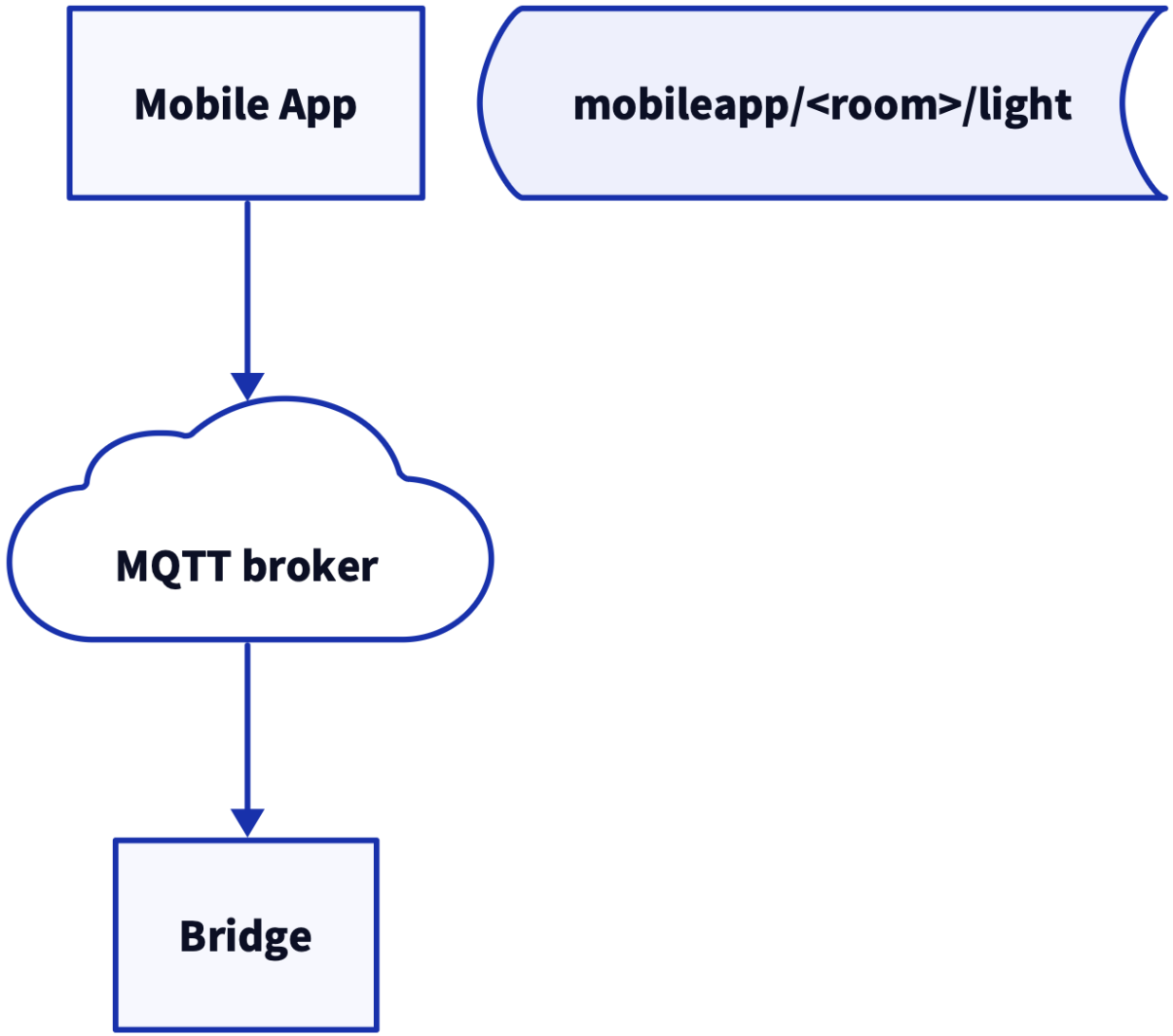
Message Evaluation

data		
timestamp	datetime	PK
username	string	
room	string	
duration	float	
on_mode	string	
off_mode	string	
color	string	
light_intensity	string	
power_consumption	float	

Data packet

current_state		
timestamp	datetime	PK
username	string	
room	string	
color	string	
light_intensity	string	
people_in_the_room	int	

Current State



MQTT

REST API

GET	/	Home endpoint for web dashboard
GET	/consumption	Get power consumption data and tips for web dashboard
GET	/ranking	Get user ranking data for web dashboard
GET	/admin	Get all users ranking data for web dashboard
POST	/bridge/packet	Post new packet from bridge
POST	/bridge/state	Update current state from bridge
GET	/state	Get current state for mobile app
GET	/colors	Get colors usage for mobile app
GET	/lights	Get lights status for mobile app
GET	/cost	Get power-cost correlation data for mobile app
GET	/past	Get past power consumption data for mobile app
GET	/future	Get future power consumption predictions for mobile app

AI

Mobile App